The one and only Mrs. Jones

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Editorial

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Physicians are in the business of making decisions about specific patients. Mrs. Jones has called to report chest pain. Is this a myocardial infarction, a pulmonary embolus or a recurrence of the nonspecific pain she often experiences after her son and his family visit? The chest pain is worrisome, and she seems preoccupied with the question of whether she ought to be taking folic acid supplements for her heart. Her physician must determine the cause of the pain, make a diagnosis and prescribe a remedy. And there are other, more preliminary, questions: Should Mrs. Jones be seen at the office, or should she be met at the emergency department? Should an electrocardiogram be obtained? A lung scan? What blood work should be ordered? And what about the folic acid? This is the core business of medicine, and it is complex.

Information scientists are keen to know what information physicians would like to have available when they tackle clinical decisions. The results of their studies are intriguing, yet ultimately predictable: physicians want information that is relevant to *specific* questions about *specific* patients. Gorman[1] gives an example provided by a primary care physician: "How can I distinguish and manage chest pain in an older woman with known coronary disease, status post angioplasty of the left anterior descending coronary artery, arthritis which precludes treadmill testing, esophagitis, inadequate personality which complicates history, given that dipyridamole testing is 180 miles away?"

As physicians, we desperately want our answers to such questions to be sound. We want to base our actions on valid evidence, but we know that this evidence — when it exists — will rarely be directly relevant to the case of Mrs. Jones. We cannot expect to find a study of even a small number of Mrs. Joneses. There is only one Mrs. Jones.

Mrs. Jones and her physician will have to agree on a reasonable course of action. In deciding what to propose, the physician will use his knowledge of basic science (the behaviour of platelets, the coronary circulation, ventilation and perfusion distortions, and the like) and of applied science, especially epidemiology (the epidemiology of coronary artery disease in women, the predictive values of perfusion lung scans, the biochemistry of folic acid, dimly remembered). But he will also use information about the patient: her desires, wishes, fears and personal responsibilities and a host of other nebulous yet critical factors. Mrs. Jones may have an illness, but she also has a predicament.

In trying to characterize the *physician's* predicament in trying to sort all of this out in the demanding age of evidence-based medicine, we asked Olli Miettinen to give us his take on the state of "evidence" as it relates to clinical practice. One of the concerns that arises in his commentary [2] is that clinical trials — the fount from which our most sacred evidence springs — are largely unhelpful, because they are posing the wrong sorts of questions. To explore this matter further, we asked Frank Davidoff, editor of the *Annals of Internal Medicine*, and Richard Horton, editor of the *The Lancet*, to give us their views.

Davidoff (page 243) agrees with Miettinen that clinical research needs to become more relevant to the bedside, and that many studies are poorly designed. But he is skeptical of Miettinen's view that the answer lies in designing more complex studies that will anticipate the patient's path through a series of treatment decisions. A more feasible approach, he argues, would be to try to better understand how physicians conduct their clinical reasoning, to further develop and refine tools in decision analysis and medical heuristics, and to be patient with

the development of meta-analysis. And he reminds us that "the randomized controlled trial in medicine is only 50 years old."

Horton (page 245) makes a case for "interpretive medicine" as a means of reconciling the practice — that is, art — of medicine and its science. This is medicine based on the physician's ability to reason, that is, to contruct a coherent and logical clinical argument in interpreting a patient's particular predicament. This is based not least in the physician's skill at reading clinical studies critically.

What have we learned? What we knew already, perhaps: that medicine is a mix of basic and applied science, and that neither can be neglected. "Biology is complex, messy and richly various, like real life."[3] That biology altered by disease is even more messy, and our discovery of it sometimes progresses in unforeseeable ways. The recent discovery that women who had managed to eat foods high in vitamin B_6 and folic acid had substantially less coronary artery disease than women whose diet was low in these nutrients[4] is available for our interpretation and use at the bedside only because of a basic-science discovery in a pathology department that a 2-month-old infant with homocystinuria had rapidly progressing arteriosclerosis[5] and a volley of subsequent studies that worked out the relation between homocysteine and cholesterol metabolism. When we combine this finding with our prior understanding of the methionine cycle (and of cofactors B_6 and folic acid), we can then at least take a scholarly stab at the question posed by Mrs. Jones: should she take folic acid?

In applying research findings at the bedside we need to make inferences that are logical and explicit. We need to think more and perhaps read less. And, as Horton urges us, we should try some Toulmin diagrams.

Davidoff gives direction for further inquiry. He underscores the complexity of medical decision-making and marvels that it works so well. But he wants us to go further in developing our understanding of how the mind works when we make complex clinical decisions rapidly using a wide variety of information, and he wants to continue to encourage research into methods, such as decision analysis, that might help physicians and patients in these decisions.

In the interim, physicians will practise medicine and make tough decisions. They will use information from a staggering variety of sources, often without explicit recognition of such use: patient preferences, family input, the local environment and its constraints, the basic sciences of medicine and evidence from clinical trials. Good clinicians know that there is only one Mrs. Jones.

References

1. Gorman PN. Information needs of physicians. *J Am Soc Inf Sci* 1995;46:729-36.
2. Miettinen OS. Evidence in medicine: invited commentary. *CMAJ* 1998; 158(2):215-21.
3. Medawar PB. *Induction and intuition in scientific thought*. Jayne Lectures for 1968. Philadelphia: American Philosophical Society; 1969. p. 1.
4. Rimm ED, Willett WC, Hu FB, Sampson L, Colditz GA, Manson JE, et al. Folate and vitamin B_6 from diet and supplements in relation to risk of coronary heart disease among women. *JAMA* 1998;279:359-64.
5. McCully KS. Homocysteine, folate, vitamin B_6 and cardiovascular disease [editorial]. *JAMA* 1998;279:392-3.